WHAT IS CLAIMED IS:

1. A method of decoding Turbo encoded information that comprises first systematic bits, first parity bits, second systematic bits, and second parity bits, the method comprising:

supplying the first systematic bits and the first parity bits to a first decoder;

supplying the second systematic bits and the second parity bits to a second decoder;

operating the first and second decoders in parallel for a number, *m*, of half-iterations, wherein *m* is greater than or equal to 1, wherein for each of the *m* half-iterations, the first decoder utilizes soft information supplied as an output from the second decoder in a preceding half-iteration, and the second decoder utilizes soft information supplied as an output from the first decoder in the preceding half-iteration;

after one or more of the *m* half-iterations, deciding whether to stop operating the first and second decoders by comparing an output from the first decoder with an output from the second decoder.

2. The method of claim 1, wherein comparing the output from the first decoder with the output from the second decoder comprises:

comparing a hard decision from the first decoder with a hard decision from the second decoder.

3. The method of claim 2, wherein deciding whether to stop operating the first and second decoders by comparing the output from the first decoder with the output from the second decoder comprises:

deciding to stop operating the first and second decoders if the hard decision from the first decoder is equal to the hard decision from the second decoder.

4. The method of claim 2, wherein deciding whether to stop operating the first and second decoders by comparing the output from the first decoder with the output from the second decoder comprises:

determining a Hamming distance between the output from the first decoder and the output from the second decoder; and

deciding whether to stop operating the first and second decoders based on a comparison of the Hamming distance with a threshold value.

5. The method of claim 4, wherein deciding whether to stop operating the first and second decoders comprises:

deciding to stop operating the first and second decoders if the Hamming distance is less than a predetermined threshold value.

6. The method of claim 4, further comprising:

prior to deciding whether to stop operating the first and second decoders, setting the threshold value equal to a value based on an earlier-determined Hamming distance,

wherein deciding whether to stop operating the first and second decoders based on a comparison of the Hamming distance with the threshold value comprises deciding to stop operating the first and second decoders if the Hamming distance is greater than the threshold value.

7. The method of claim 6, wherein the earlier-determined Hamming distance is determined from an earlier-generated output from the first decoder and an earlier-generated output from the second decoder, the earlier-generated outputs from the first and second decoders being generated during an immediately preceding half-iteration.

8. The method of claim 1, wherein comparing the output from the first decoder with the output from the second decoder comprises:

comparing soft values from the first decoder with soft values from the second decoder.

9. The method of claim 8, wherein comparing soft values from the first decoder with soft values from the second decoder comprises:

determining a distance between soft values from first decoder and soft values from second decoder.

10. The method of claim 9, wherein deciding whether to stop operating the first and second decoders by comparing the output from the first decoder with the output from the second decoder comprises:

deciding to stop operating the first and second decoders based on a comparison of the distance with a threshold value.

11. The method of claim 10, wherein deciding to stop operating the first and second decoders comprises:

deciding to stop operating the first and second decoders if the distance is less than a predetermined threshold value.

12. The method of claim 10, further comprising:

prior to deciding whether to stop operating the first and second decoders, setting the threshold value equal to a value based on an earlier-determined distance,

wherein deciding whether to stop operating the first and second decoders based on a comparison of the distance with the threshold value comprises deciding to stop operating the first and second decoders if the distance is greater than the threshold value.

13. The method of claim 12, wherein the earlier-determined distance is determined from an earlier-generated output from the first decoder and an earlier-

generated output from the second decoder, the earlier-generated outputs from the first and second decoders being generated during an immediately preceding half-iteration.

14. The method of claim 1, further comprising:

prior to the one or more of the *m* half-iterations, operating the first and second decoders in parallel for an initial number of half-iterations without deciding whether to stop operating the first and second decoders.

15. The method of claim 1, wherein each of the first and second decoders is a maximum a posteriori (MAP) decoder, and wherein comparing the output from the first decoder with the output from the second decoder comprises:

comparing an intermediate result from the first decoder with an intermediate result from the second decoder.

16. A method of decoding Turbo encoded information that comprises first systematic bits, first parity bits, second systematic bits, and second parity bits, the method comprising:

supplying the first systematic bits and the first parity bits to a first decoder;

supplying the second systematic bits and the second parity bits to a second decoder;

operating the first and second decoders in parallel for a number, *m*, of half-iterations, wherein *m* is greater than or equal to 1, wherein for each of the *m* half-iterations, the first decoder utilizes soft information supplied as an output from the second decoder in a preceding half-iteration, and the second decoder utilizes soft information supplied as an output from the first decoder in the preceding half-iteration;

after one or more of the *m* half-iterations, deciding whether to stop operating the first and second decoders based on a comparison of an output from

the first decoder with an output from the second decoder and on an assessment of a reliability of decisions supplied at outputs of the first and second decoders.

17. The method of claim 16, wherein the assessment of the reliability of decisions supplied at outputs of the first and second decoders is performed in accordance with

$$\gamma \underset{\text{not OK}}{\overset{\text{OK}}{\lessgtr}} \min\left(\sum_k \left|S_{1,k}\right|, \sum_k \left|S^i_{2,k}\right| \right),$$

where γ is a threshold value, S_1 is a soft output of the first decoder, S^i_2 is a de-interleaved soft output of the second decoder, and $S_{1,k}$ and $S^i_{2,k}$ are the k:th components of S_1 and S^i_2, respectively.

18. An apparatus for decoding Turbo encoded information that comprises first systematic bits, first parity bits, second systematic bits, and second parity bits, the apparatus comprising:

logic that supplies the first systematic bits and the first parity bits to a first decoder;

logic that supplies the second systematic bits and the second parity bits to a second decoder;

logic that operates the first and second decoders in parallel for a number, m, of half-iterations, wherein m is greater than or equal to 1, wherein for each of the m half-iterations, the first decoder utilizes soft information supplied as an output from the second decoder in a preceding half-iteration, and the second decoder utilizes soft information supplied as an output from the first decoder in the preceding half-iteration;

logic that decides, after one or more of the m half-iterations, whether to stop operating the first and second decoders by comparing an output from the first decoder with an output from the second decoder.

19. The apparatus of claim 18, wherein comparing the output from the first decoder with the output from the second decoder comprises:

comparing a hard decision from the first decoder with a hard decision from the second decoder.

20. The apparatus of claim 19, wherein the logic that decides whether to stop operating the first and second decoders by comparing the output from the first decoder with the output from the second decoder comprises:

logic that decides to stop operating the first and second decoders if the hard decision from the first decoder is equal to the hard decision from the second decoder.

21. The apparatus of claim 19, wherein the logic that decides whether to stop operating the first and second decoders by comparing the output from the first decoder with the output from the second decoder comprises:

logic that determines a Hamming distance between the output from the first decoder and the output from the second decoder; and

logic that decides whether to stop operating the first and second decoders based on a comparison of the Hamming distance with a threshold value.

22. The method of claim 21, wherein the logic that decides whether to stop operating the first and second decoders comprises:

logic that decides to stop operating the first and second decoders if the Hamming distance is less than a predetermined threshold value.

23. The apparatus of claim 21, further comprising:

logic that sets the threshold value equal to a value based on an earlier-determined Hamming distance prior to deciding whether to stop operating the first and second decoders,

wherein the logic that decides whether to stop operating the first and second decoders based on a comparison of the Hamming distance with the threshold value comprises logic that decides to stop operating the first and second decoders if the Hamming distance is greater than the threshold value.

24. The apparatus of claim 23, wherein the earlier-determined Hamming distance is determined from an earlier-generated output from the first decoder and an earlier-generated output from the second decoder, the earlier-generated outputs from the first and second decoders being generated during an immediately preceding half-iteration.

25. The apparatus of claim 18, wherein comparing the output from the first decoder with the output from the second decoder comprises:

comparing soft values from the first decoder with soft values from the second decoder.

26. The apparatus of claim 25, wherein comparing soft values from the first decoder with soft values from the second decoder comprises:

determining a distance between soft values from first decoder and soft values from second decoder.

27. The apparatus of claim 26, wherein the logic that decides whether to stop operating the first and second decoders by comparing the output from the first decoder with the output from the second decoder comprises:

logic that decides to stop operating the first and second decoders based on a comparison of the distance with a threshold value.

28. The apparatus of claim 27, wherein the logic that decides to stop operating the first and second decoders comprises:

logic that decides to stop operating the first and second decoders if the distance is less than a predetermined threshold value.

29. The apparatus of claim 27, further comprising:

logic that sets the threshold value equal to a value based on an earlier-determined distance prior to deciding whether to stop operating the first and second decoders,

wherein the logic that decides whether to stop operating the first and second decoders based on a comparison of the distance with the threshold value comprises logic that decides to stop operating the first and second decoders if the distance is greater than the threshold value.

30. The apparatus of claim 29, wherein the earlier-determined distance is determined from an earlier-generated output from the first decoder and an earlier-generated output from the second decoder, the earlier-generated outputs from the first and second decoders being generated during an immediately preceding half-iteration.

31. The apparatus of claim 18, further comprising:

logic that, prior to the one or more of the m half-iterations, operates the first and second decoders in parallel for an initial number of half-iterations without deciding whether to stop operating the first and second decoders.

32. The apparatus of claim 18, wherein each of the first and second decoders is a maximum a posteriori (MAP) decoder, and wherein comparing the output from the first decoder with the output from the second decoder comprises:

comparing an intermediate result from the first decoder with an intermediate result from the second decoder.

33. An apparatus for decoding Turbo encoded information that comprises first systematic bits, first parity bits, second systematic bits, and second parity bits, the apparatus comprising:

logic that supplies the first systematic bits and the first parity bits to a first decoder;

logic that supplies the second systematic bits and the second parity bits to a second decoder;

logic that operates the first and second decoders in parallel for a number, m, of half-iterations, wherein m is greater than or equal to 1, wherein for each of the m half-iterations, the first decoder utilizes soft information supplied as an output from the second decoder in a preceding half-iteration, and the second decoder utilizes soft information supplied as an output from the first decoder in the preceding half-iteration;

logic that, after one or more of the m half-iterations, decides whether to stop operating the first and second decoders based on a comparison of an output from the first decoder with an output from the second decoder and on an assessment of a reliability of decisions supplied at outputs of the first and second decoders.

34. The apparatus of claim 33, wherein the assessment of the reliability of decisions supplied at outputs of the first and second decoders is performed in accordance with

$$\gamma \underset{\text{not OK}}{\overset{\text{OK}}{\lessgtr}} \min\left(\sum_k \left|S_{1,k}\right|, \sum_k \left|S_{2,k}^i\right|\right),$$

where γ is a threshold value, S_1 is a soft output of the first decoder, S_2^i is a de-interleaved soft output of the second decoder, and $S_{1,k}$ and $S_{2,k}^i$ are the k:th components of S_1 and S_2^i, respectively.

35. A computer-readable medium having stored thereon a computer program for decoding Turbo encoded information that comprises first systematic bits, first

parity bits, second systematic bits, and second parity bits, the computer program comprising instructions for performing:

supplying the first systematic bits and the first parity bits to a first decoder;

supplying the second systematic bits and the second parity bits to a second decoder;

operating the first and second decoders in parallel for a number, *m*, of half-iterations, wherein *m* is greater than or equal to 1, wherein for each of the *m* half-iterations, the first decoder utilizes soft information supplied as an output from the second decoder in a preceding half-iteration, and the second decoder utilizes soft information supplied as an output from the first decoder in the preceding half-iteration;

after one or more of the *m* half-iterations, deciding whether to stop operating the first and second decoders by comparing an output from the first decoder with an output from the second decoder.

36. A computer readable medium having stored thereon a computer program for decoding Turbo encoded information that comprises first systematic bits, first parity bits, second systematic bits, and second parity bits, the computer program comprising instructions for performing:

supplying the first systematic bits and the first parity bits to a first decoder;

supplying the second systematic bits and the second parity bits to a second decoder;

operating the first and second decoders in parallel for a number, *m*, of half-iterations, wherein *m* is greater than or equal to 1, wherein for each of the *m* half-iterations, the first decoder utilizes soft information supplied as an output from the second decoder in a preceding half-iteration, and the second decoder utilizes soft information supplied as an output from the first decoder in the preceding half-iteration;

after one or more of the *m* half-iterations, deciding whether to stop operating the first and second decoders based on a comparison of an output from

the first decoder with an output from the second decoder and on an assessment of a reliability of decisions supplied at outputs of the first and second decoders.